Alcohol Use and Heavy Episodic Drinking Prevalence and Predictors Among National Samples of American Eighth- and Tenth-Grade Students*

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ABSTRACT. Objective: Given the public health impact of adolescent alcohol use and heavy episodic drinking, we sought to identify the prevalence of types of alcohol use among national samples of 8th- and 10th-grade American students. In addition, a range of known risk factors was used to predict the most problematic type: heavy episodic use. **Method:** Monitoring the Future data on lifetime, past-year, and past-30-day alcohol use and on past-2-week heavy episodic drinking were available for 505,668 students from 1991 to 2007 (weighted $N = 505,853$; 51.5% girls; 65.3% White, 12.3% Black, 11.1% Hispanic). Logistic regression was then used in a representative subsample of 110,130 students to predict

heavy episodic drinking in the previous 2 weeks. **Results:** In the most recent cohorts, about 1 in 10 8th graders and 1 in 5 10th graders had engaged in heavy episodic drinking in the past 2 weeks. Explanatory variables in logistic regression were largely invariant across cohort, grade level, gender, and race/ethnicity, accounting for 48% of the variance in heavy episodic drinking. **Conclusions:** Heavy episodic drinking continues to be a prevalent behavior among the nation's youth, with consistent risk factors over time, highlighting the continued necessity of effective screening and prevention efforts. (*J. Stud. Alcohol Drugs*, 71, 41-45, 2010)

THE PUBLIC HEALTH IMPACT of underage alcohol use has been well documented in previous research (Chassin et al., 2009; Hawkins et al., 1992; Hulse et al., 2001). Underage alcohol consumption is associated with negative consequences such as injury, accidents, and later alcohol-related problems (Office of the Surgeon General, 2007; National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2004). Early screening and prevention efforts are especially important, given evidence that alcohol use in adolescence may harm the developing brain (Brown et al., 2008; Spear, 2007). To inform these efforts, understanding the patterns and predictors of alcohol use among adolescent drinkers is vital.

Differentiating individuals who use alcohol in excess (i.e., heavy episodic use) is especially important for identifying risk for acute health and social consequences. Therefore, the current study documents the relative strength of putative risk and protective factors in an attempt to guide efforts to identify individuals at risk and to prevent heavy episodic alcohol use. Our emphasis on risk and protective factors in six

domains is guided by several current conceptual multidomain approaches (e.g., Brown et al., 2008; Chassin et al., 2009; Hawkins et al., 1992; Maggs and Schulenberg, 2005) as well as concern with more proximal predictors that are relatively easily obtainable and that can assist screening efforts.

First, a number of risk and protective factors for alcohol use behavior have been demonstrated in the research literature, including differences by gender and ethnicity (Chassin et al., 2009). Second, school factors, such as poorer academic achievement and truancy, are correlates of greater alcohol use (Bachman et al., 2007). Third, availability of alcohol (Komro et al., 2007) and the influence of peers are important factors for students' alcohol use (Chassin et al., 2009; Maggs and Schulenberg, 2005). Fourth, individual factors include tendencies toward risk taking (Pilgrim et al., 2006; Zuckerman, 1979), aggression (Willoughby et al., 2004), and low self-esteem (Swaim and Wayman, 2004). Fifth, more proximal, behavior-specific explanations for alcohol use include attitudes such as disapproval and perceived risk of drinking (Bachman et al., 1990; Johnston, 2003; Petraitis et al., 1995). Finally, the use of other substances such as tobacco and marijuana are noted correlates of underage alcohol use (Donovan et al., 1999).

In the present study, we used nationally representative data from the Monitoring the Future (MTF) study (Johnston et al., 2008) on 8th- and 10th-grade American adolescents, across 17 cohorts beginning in 1991, to identify groups of drinkers, and then we used several risk and protective factors from the multiple domains listed above to predict problem-

Received: December 16, 2008. Revision: June 25, 2009.

*This research was supported by National Institute on Drug Abuse grant R01 DA 01411 (Lloyd Johnston, principal investigator); and National Institute on Alcohol Abuse and Alcoholism grant F32 AA017806 awarded to Megan E. Patrick. The content here is solely the responsibility of the authors and does not necessarily represent the official views of the sponsors.

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atic drinking.¹ We considered prevalence of different types of drinkers as a function of cohort, grade level, and gender. In predicting heavy episodic drinking, we considered the extent to which risk and protective factors are moderated by four key demographic characteristics: cohort, grade, gender, and race/ethnicity.

Method

Nationally representative data were used in the current study to document the prevalence and risk factors of alcohol use among American youth. MTF is an ongoing study that annually surveys representative groups of students in 8th, 10th, and 12th grades in the United States (Johnston et al., 2008). The current analyses accounted for the complex multistage sample design, and the data were weighted to adjust for differential selection probabilities. For Table 1, data were available for 505,668 8th- and 10th-grade students from 1991 to 2007 (weighted $N = 505,853$; 51.5% girls; 65.3% White, 12.3% Black, 11.1% Hispanic, 11.3% other race). Data on predictors of interest for the logistic regression (Table 2) were available on one of the six randomly distributed forms, yielding a sample of 110,130 8th- and 10th-grade students from 1991 to 2007 (weighted $n = 111,944$; 53.6% girls; 72.0% White, 9.5% Black, 8.5% Hispanic, 10.0% other race).

Measures

Alcohol use. Participants were asked the number of times they had used alcohol in their lifetime, over the past 12 months, and over the past 30 days. In addition, they reported the number of times they had consumed five or more drinks in a row in the past 2 weeks, which was coded as heavy episodic drinking. These responses were used to categorize individuals into alcohol-use groups.

Predictor variables. Demographic characteristics included historical years (grouped as 1991-1996, 1997-2002, and 2003-2007), gender, grade, and race (White, Black, Hispanic, or other). Parents' education was coded as the mean of mother's and father's education, on a scale of 1 = *grade school* to 6 = *graduate school*. School factors were high school grades (coded from 1 = *D or lower* to 9 = *A*) and classes cut in the past 4 weeks (coded from 1 = *none* to 7 = *11 or more*). Peer factors included evenings out in a typical week without parents (coded from 1 = *less than one* to 6 = 6

or 7); whether students believed that their friends got drunk (1 = *none* to 5 = *all*) and whether they personally felt pressured to drink alcohol (1 = *none* to 4 = *a lot*); and availability of alcohol (i.e., whether participants thought that it was *probably impossible* = 1 to *very easy* = 5 to get alcohol).

Three scales assessed individual factors. Self-esteem represented the mean of eight items (1 = *disagree* to 5 = *agree*; $\alpha = .85$; e.g., "I am a person of worth"). Risk taking was a mean of two items (e.g., "get a kick out of dangerous things"; 1 = *disagree* to 5 = *agree*; $\alpha = .78$). Aggressive behavior was assessed with the mean of seven items (1 = *none* to 5 = *5+ times*; $\alpha = .83$; e.g., "damaged school property"). Alcohol attitudes were measured by indicators of disapproval of drinking five or more drinks on the weekend (1 = *don't disapprove* to 3 = *strongly disapprove*) and perceived risk of drinking five or more drinks on the weekend (1 = *no risk* to 4 = *great risk*). Finally, other substance-use predictors were the number of cigarettes smoked in the past 30 days (on a scale of 1 = *none* to 7 = *two or more packs per day*) and marijuana use in the past 30 days (1 = *none* to 7 = *40+ times*).

Results

In the first phase of the analyses, our focus was on the prevalence of six progressively troublesome and mutually exclusive alcohol-use groups, defined by lifetime, annual, and monthly alcohol use and frequency of heavy episodic drinking in the past 2 weeks for 8th- and 10th-grade boys and girls (see Table 1). Contrast analyses (using $p < .001$) indicated that cohorts of 8th and 10th graders in 2003-2007 had higher prevalence of "never" users than cohorts of 8th and 10th graders from both 1991-1996 and 1997-2002. In addition, the prevalence of all groups indicating lifetime or more recent use without heavy episodic use was significantly lower among the most recent cohorts. The prevalence of heavy-episodic-use groups in the most recent cohorts was lower among 8th graders. Among 10th graders in the most recent cohorts, the prevalence of a single episode of heavy use did not significantly differ from that of earlier cohorts; the prevalence of engaging in more than one episode of heavy use did not significantly differ from cohorts 1991-1996, although it was significantly lower than for 10th graders in 1997-2002.

In considering the most recent cohort groups (cohorts 2003-2007), 60% of 8th graders and 38% of 10th graders had never used alcohol in their lifetime. Very few (<7%) had used alcohol in their lifetime but not in the past year. Alcohol use between at least once in the past 12 months and use in the past 30 days but no heavy episodic drinking (combining data rows 3 and 4 in Table 1) was reported by 24.1% of 8th graders and 35.9% of 10th graders. At least one episode of heavy episodic use in the prior 2 weeks was reported by 9.5% of 8th graders and 20.7% of 10th graders (combining the second to last two rows in Table 1). It is notable that

¹Although the annual MTF monographs document the national rates of lifetime, annual, and monthly use and rates of heavy episodic drinking in the past 2 weeks (Johnston et al., 2008), the focus is not on the prevalence of groups of adolescents with varying levels of experience with alcohol or how the prevalence of these particular groups changes across time. The relative prediction of a range of risk and protective factors (not part of the annual MTF monographs) was investigated here to further describe and help explain adolescent heavy episodic use in nationally representative samples of 8th- and 10th-grade students.

TABLE 1. Prevalence (percentage) of alcohol use, by cohort, grade, and gender

Variable	1991-1996						1997-2002						2003-2007					
	8th graders			10th graders			8th graders			10th graders			8th graders			10th graders		
	M	F	Tot.	M	F	Tot.	M	F	Tot.	M	F	Tot.	M	F	Tot.	M	F	Tot.
Never in lifetime ^a	39.1	40.9	40.0	24.9	24.8	24.8	49.3	50.7	50.0	31.2	29.8	30.4	60.1	59.0	59.5	39.2	35.8	37.5
Used in lifetime but not past year	12.1	10.9	11.5	8.7	8.9	8.8	8.7	7.5	8.1	6.5	6.7	6.6	7.4	6.4	6.9	5.7	6.0	5.9
Used in past year but not past month	22.6	23.1	22.9	23.8	28.3	26.1	19.0	19.7	19.4	21.4	25.8	23.7	15.6	16.4	16.0	20.6	24.0	22.3
Used in past month but no heavy use	12.7	13.4	13.1	17.1	18.8	18.0	10.3	10.5	10.4	14.2	16.9	15.6	7.6	8.6	8.1	12.4	14.8	13.6
One heavy episode	5.0	5.1	5.1	8.8	8.3	8.5	4.7	4.8	4.8	8.7	8.4	8.5	3.5	3.8	3.7	7.8	7.7	7.8
≥2 heavy episodes	8.4	6.6	7.5	16.8	10.8	13.7	8.1	6.8	7.5	18.1	12.4	15.2	5.9	5.7	5.8	14.2	11.7	12.9
Weighted <i>n</i>	95,477			86,784			91,295			80,939			75,657			75,702		

Notes: M = male; F = female; tot. = total. ^aAlcohol-use groups are mutually exclusive. Total weighted *N* = 505,853.

reporting heavy episodic use two or more times in the past 2 weeks was more common than reporting heavy episodic use just once: Among students in the most recent cohort group who had engaged in heavy episodic use in the past 2 weeks, 61.1% of 8th graders and 62.3% of 10th graders had done so more than once.

In the second phase of the study, we conducted logistic regression analyses to predict whether students had engaged in at least one episode of heavy episodic drinking in the past 2 weeks (i.e., comparing the first four data rows to the subsequent two data rows in Table 1). A key question here was the extent to which the risk and protective factors were invariant across four demographic characteristics: cohort, grade, gender, and race/ethnicity. To test this invariance, we conducted a set of two-way interaction analyses including each key demographic characteristic by all other predictors. Overall, few (less than 10% of) interaction terms were significant at a protected alpha level of $p < .001$ in this large sample. Thus, the general pattern was that the risk and protective factors were largely invariant in magnitude across the four identified demographic characteristics. Before considering these few significant interaction terms, we first present findings for the total sample (without interaction terms).

As shown in Table 2, the risk and protective factors together explained 48% of the variance, as indicated by the Nagelkerke R^2 value. Cohort differences in level were previously discussed; in multivariate models, cohort was not uniquely predictive. In terms of demographic predictors, 10th graders had greater odds of drinking heavily than 8th graders. Gender was not a unique significant predictor in the logistic model, although the bivariate correlation indicated that boys had greater odds of heavy episodic use. Black students had lower odds and Hispanic students had greater odds of engaging in heavy episodic use, compared with White students.

As far as school behaviors are concerned, getting better grades was associated with lower odds and cutting class was associated with greater odds of heavy episodic drink-

ing. Results with peer factors indicated that spending more evenings out with peers, having friends who get drunk, feeling pressure to drink, and the perceived availability of alcohol were all related to greater odds of engaging in heavy episodic alcohol use. Individual factors including less positive self-esteem, greater risk taking, and greater aggressive behavior were all uniquely associated with greater odds of heavy episodic drinking. Alcohol attitudes regarding disapproval and perceived risk of drinking were associated with lower odds of heavy episodic use. Individuals who engaged

TABLE 2. Predicting heavy episodic drinking in the past 2 weeks among American 8th- and 10th-grade students from 1991 to 2007 in national samples

Variable	Logistic regression predicting heavy use			
	r^a	OR	[CI]	p
Cohorts 1997-2002 ^b	.02	0.97	[0.91, 1.03]	.305
Cohorts 2003-2007 ^b	-.02	1.00	[0.92, 1.08]	.967
Grade 10 ^c	.14	1.15	[1.08, 1.22]	<.001
Male gender ^d	.05	1.02	[0.97, 1.07]	.502
Black ^e	-.07	0.71	[0.62, 0.81]	<.001
Hispanic ^e	.03	1.16	[1.05, 1.27]	.003
Other race ^e	-.03	0.96	[0.88, 1.04]	.297
Parent college education	-.06	0.99	[0.97, 1.01]	.378
High school grades	-.21	0.96	[0.95, 0.97]	<.001
Classes cut past 4 weeks	.26	1.15	[1.11, 1.18]	<.001
Evenings out typical week	.21	1.16	[1.14, 1.18]	<.001
Friends get drunk	.42	1.69	[1.64, 1.73]	<.001
Pressure to drink	.06	1.08	[1.05, 1.12]	<.001
Availability of alcohol	.17	1.26	[1.22, 1.30]	<.001
Self-esteem	-.14	0.94	[0.91, 0.97]	<.001
Risk taking	.23	1.15	[1.12, 1.17]	<.001
Aggressive behavior	.31	1.21	[1.17, 1.26]	<.001
Disapprove of heavy drinking	-.46	0.47	[0.46, 0.49]	<.001
Perceived risk of heavy drinking	-.36	0.77	[0.75, 0.80]	<.001
Cigarette use past 30 days	.41	1.43	[1.39, 1.47]	<.001
Marijuana use past 30 days	.39	1.28	[1.25, 1.32]	<.001
Weighted <i>n</i>	111,944			
Nagelkerke R^2	.48			

^aAll bivariate correlations with heavy episodic drinking were significant at $p < .001$; ^breferent category is cohorts 1991-1996; ^creferent category is Grade 8; ^dreferent category is girls; ^ereferent category is White.

in other substance-use behaviors (i.e., smoking cigarettes and using marijuana) had greater odds of heavy episodic alcohol use.

These total sample findings were moderated to some extent by the significant two-way interaction terms. Of the 38 possible cohort interactions, only one emerged as significant: Aggressive behavior was less predictive of heavy episodic drinking in the middle cohorts (1997-2002), compared with those in the earlier cohorts (1991-1996) and later cohorts (2003-2007). Only 3 of the 20 grade interactions were significant: pressure to drink, disapproval of weekend heavy episodic drinking, and cigarette use were more strongly associated with heavy episodic use among 8th graders than among 10th graders. Of the 20 gender interactions, four were significant: Black race, risk taking, and perceived risk were more predictive of heavy episodic use among girls than among boys; self-esteem was more predictive among boys than among girls.

Of the 54 possible race/ethnicity interactions, only 4 were significant: Among Black students, self-esteem was a weaker predictor and disapproval was a stronger predictor of heavy episodic use than among White students. Having friends who get drunk was a stronger predictor of heavy episodic use among White adolescents than among either Black or Hispanic adolescents. Thus, regarding the risk and protective factors listed in Table 2, parent education, high school grades, classes cut, evenings out, alcohol availability, and marijuana use were not moderated by any of the four key demographic characteristics. Self-esteem was moderated by two characteristics (by gender and race/ethnicity), as was disapproval of alcohol use (by grade and race/ethnicity), and each of the other predictors was moderated by one characteristic: pressure to drink (by grade), friends get drunk (by race/ethnicity), risk taking (by gender), aggressive behavior (by cohort), perceived risk (by gender), and cigarette use (by grade). Overall, although these few moderated effects are noteworthy, the associations with risk and protective factors were largely invariant across cohort, grade, gender, and race/ethnicity.

Discussion

This study documents the prevalence of groups of individuals with a spectrum of alcohol-use behaviors in nationally representative samples of 8th- and 10th-grade American students. Although recent cohorts show increases in the prevalence of no alcohol use or low-to-moderate levels of use, heavy episodic use remains high among adolescents, especially 10th graders.

In addition, a range of constructs was used to demonstrate the relative predictive power of demographic, behavioral, and social attitudinal risk and protective factors for adolescent heavy episodic drinking, which remained highly stable across historical time (see also Brown et al., 2001; Donovan et al.,

1999). With all other predictors in the logistic model, gender and parents' college education were not significant predictors of heavy episodic drinking. Other substance use was among the strongest correlates of alcohol use, suggesting a need for intervention with regard to multiple substances.

Disapproval of weekend heavy episodic use was highly protective, indicating the power of attitudes toward alcohol use to differentiate individuals at risk (Johnston, 2003). However, the association between disapproval and behavior is likely reciprocal, such that disapproval reduces heavy episodic drinking, but experiences with heavy episodic drinking also likely reduce disapproval of the behavior. Having friends who get drunk was the single strongest predictor of heavy-episodic-drinking behavior. Among younger students, the perceived pressure to drink was especially important, suggesting that the influence of peers may change developmentally from a sense of overall peer behavior to a greater impact of close friends. Furthermore, the behavior of friends is likely related to individual behavior because of the processes of selection and socialization (Kandel, 1985).

Heavy episodic alcohol use is responsible for acute and long-term health and social consequences (Office of the Surgeon General, 2007; NIAAA, 2004). Therefore, this study focused on both describing and predicting alcohol-use behavior among several recent national cohorts of American adolescents. Although there has been some decline in alcohol use among recent cohorts (Johnston et al., 2008), the overall rates of heavy episodic drinking are troublesome. As we show, about 1 in 10 8th graders and 1 in 5 10th graders have engaged in heavy episodic drinking at least once—and the majority of them twice or more—over a 2-week period. With alcohol use, and particularly heavy episodic drinking, being so common among the nation's 13- to 16-year-olds, the continued necessity of effective screening and prevention efforts is magnified.

Our findings confirm that predictors of heavy episodic drinking among middle and high school students represent several domains suggesting a confluence of individual and social influences (although our cross-sectional design does not allow for causal statements). Patterns of prediction were generally similar across historical time, grade level, gender, and race/ethnicity, suggesting a robust web of influences predicting current heavy-alcohol-use behaviors. Although etiological research has progressed considerably in recent years in determining the risk and protective factors, continued research on the mechanisms and processes of multiple risk and protective factors is needed to increase our understanding of how heavy episodic alcohol use develops in adolescence (Kaplow et al., 2002; Schulenberg, 2006).

References

- Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1990). Explaining the recent decline in cocaine use among young adults: Further evidence

- that perceived risks and disapproval lead to reduced drug use. *Journal of Health and Social Behavior*, 31, 173-184.
- Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2007). *The education-drug use connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York: Lawrence Erlbaum.
- Brown, S. A., McGue, M., Maggs, J., Schulenberg, J., Hingson, R., Swartzwelder, S., et al. (2008). A developmental perspective on alcohol and youths 16 to 20 years of age. *Pediatrics*, 121, (4 Supplement): S290-S310.
- Brown, T. N., Schulenberg, J., Bachman, J. G., O'Malley, P. M., & Johnston, L. D. (2001). Are risk and protective factors for substance use consistent across historical time? National data from the high school classes of 1976 through 1997. *Prevention Science*, 2, 29-43.
- Chassin, L., Hussong, A., & Beltran, I. (2009). Adolescent substance use. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology* (3rd ed., pp. 723-764). Hoboken, NJ: John Wiley & Sons.
- Donovan, J. E., Jessor, R., & Costa, F. M. (1999). Adolescent problem drinking: Stability of psychosocial and behavioral correlates across a generation. *Journal of Studies on Alcohol*, 60, 352-361.
- Hawkins, J. D., Catalano, R. F., & Miller, J. Y. (1992). Risk and protective factors for alcohol and other drug problems in adolescence and early adulthood: Implications for substance abuse prevention. *Psychological Bulletin*, 112, 64-105.
- Hulse, G. K., Robertson, S. I., & Tait, R. J. (2001). Adolescent emergency department presentations with alcohol- and other drug-related problems in Perth, Western Australia. *Addiction*, 96, 1059-1067.
- Johnston, L. D. (2003). Alcohol and illicit drugs: The role of risk perceptions. In D. Romer (Ed.), *Reducing adolescent risk: Toward an integrated approach* (pp. 56-74). Thousand Oaks, CA: Sage.
- Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2008). *Monitoring the future national survey results on drug use, 1975-2007: Volume I. Secondary school students* (NIH Publication No. 08-6418A). Bethesda, MD: National Institute on Drug Abuse.
- Kandel, D. B. (1985). On processes of peer influences in adolescent drug use: A developmental perspective. *Advances in Alcohol and Substance Abuse*, 4, 139-163.
- Kaplow, J. B., Curran, P. J., Dodge, K. A., & the Conduct Problems Prevention Research Group. (2002). Child, parent, and peer predictors of early-onset substance use: A multisite longitudinal study. *Journal of Abnormal Child Psychology*, 30, 199-216.
- Komro, K. A., Maldonado-Molina, M. M., Tobler, A. L., Bonds, J. R., & Muller, K. E. (2007). Effects of home access and availability of alcohol on young adolescents' alcohol use. *Addiction*, 102, 1597-1608.
- Maggs, J. L., & Schulenberg, J. E. (2005). Initiation and course of alcohol consumption among adolescents and young adults. In M. Galanter (Ed.), *Recent developments in alcoholism: Vol. 17. Alcohol problems in adolescents and young adults* (pp. 29-47). New York: Kluwer Academic/Plenum.
- National Institute on Alcohol Abuse and Alcoholism. (2004). *Understanding underage drinking* (NIH Publication No. 04-5465). Bethesda, MD: Author. Retrieved from <http://pubs.niaaa.nih.gov/publications/Underage.pdf>.
- Office of the Surgeon General. (2007). *The Surgeon General's call to action to prevent and reduce underage drinking*. Rockville, MD: Department of Health and Human Services.
- Petratis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin*, 117, 67-86.
- Pilgrim, C. C., Schulenberg, J. E., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (2006). Mediators and moderators of parental involvement on substance use: A national study of adolescents. *Prevention Science*, 7, 75-89.
- Schulenberg, J. E. (2006). Understanding the multiple contexts of adolescent risky behavior and positive development: Advances and future directions. *Applied Developmental Science*, 10, 107-113.
- Spear, L. (2007). The developing brain and adolescent-typical behavior patterns: An evolutionary approach. In D. Romer and E. F. Walker (Eds.), *Adolescent psychopathology and the developing brain: Integrating brain and prevention science* (pp. 9-30). New York: Oxford Univ. Press.
- Swaim, R. C., & Wayman, J. C. (2004). Multidimensional self-esteem and alcohol use among Mexican American and white non-Latino adolescents: Concurrent and prospective effects. *American Journal of Orthopsychiatry*, 74, 559-570.
- Willoughby, T., Chalmers, H., & Busseri, M. A. (2004). Where is the syndrome? Examining co-occurrence among multiple problem behaviors in adolescence. *Journal of Consulting and Clinical Psychology*, 72, 1022-1037.
- Zuckerman, M. (1979). Sensation seeking and risk taking. In C. E. Izard (Ed.), *Emotions in personality and psychopathology* (pp. 163-197). New York: Plenum Press.